



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/709,517	05/11/2004	Andrew M. Bober	JD-251A-US	3516
24804	7590	07/23/2008	EXAMINER	
JohnsonDiversey, Inc.			NGUYEN, NGOC YEN M	
8310 16TH STREET, M/S 509				
PO BOX 902			ART UNIT	PAPER NUMBER
STURTEVANT, WI 53177-0902			1793	
			MAIL DATE	DELIVERY MODE
			07/23/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/709,517	BOBER ET AL.
	Examiner	Art Unit
	Ngoc-Yen M. Nguyen	1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 08 May 2008.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-70 is/are pending in the application.
 4a) Of the above claim(s) 1-23 and 47-70 is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 24-46 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO/SB/08)
 Paper No(s)/Mail Date 7/19/04 and 1/11/05.

4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____.
 5) Notice of Informal Patent Application
 6) Other: _____.

DETAILED ACTION

Applicant's election with traverse of Group III in the reply filed on May 8, 2008 is acknowledged. The traversal is on the ground(s) that some groupings have many similar limitations, which likely require a search in both classes identified for proper examination. This is not found persuasive because the search for the composition and the process, though may overlap, but is still different as shown in the restriction requirement.

The requirement is still deemed proper and is therefore made FINAL.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 24-46 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

In the instant claims, the word "composition" is considered as a product of mixing or combining the components (a)-(d) as recited in the independent claim 1 and other additional components as required in various dependent claims (note the definition #4 of "composition" from Webster.com). However, when all the components (a)-(d) are mixed

or combined, at least some of the components will react with each other immediately to form chlorine dioxide, therefore, a "composition" comprising the components (a)-(d) cannot be formed. As disclosed in the instant specification, "certain components *must* be stored separately in order to prevent the reaction from occurring before desired" (note paragraph [0023]. There is no sufficient disclosure in the instant specification to show that a composition (i.e. a mixture) comprising the components (a)-(d) can be produced without forming chlorine dioxide.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 36-42 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 36-37, it is unclear if the "ppm" is by weight; also, it is unclear the ppm is based on the total amount of all components or what.

In claims 38-39, there is no antecedent basis for "the solution".

In claims 40-42, it is unclear what is required by "effective quantity of chlorine dioxide". In the Examples, various amount of chlorine dioxide can be produced, however, it is unclear if the claimed "effective amount" is limited to these amounts because it is known in the art that a disinfectant solution can contain chlorine dioxide as low as 0.2 mg/l (about 0.2 ppm) (note Hamilton et al 2001/0038805) and as high as 500 ppm (note Jooste 5,389,384, column 7, lines 36-41).

In claim 41, it is unclear what is required by “when diluted”.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

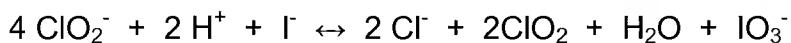
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 24-34, 38-46 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 02/23993.

For the purpose of examination, when the process of producing chlorine dioxide as disclosed in the applied reference uses all the components as required in the instant claims, then the claimed composition is met.

WO '993 discloses the generation of chlorine dioxide through the reaction of at least one iodo-compound having at least one iodine atom and at least one ionic chlorite compound (note page 7, lines 20-22) according the following reaction:



(note equation on line 16 of page 8).

For component a): the chlorite compound is preferably a salt of an alkali metal, an alkaline earth metal, a transition metal, or mixture thereof. Examples of useful chlorites include sodium chlorite and potassium chlorite (note page 10, lines 22-30).

For component b): WO '993 further teaches that acids or salts may be added for controlling pH or for buffering, or as a background chorine dioxide generation aide.

Such acids or salts include, but are not limited to, aliphatic or olefinic carboxylic acids or carboxylate salts, aromatic carboxylic acids or salts, inorganic acids or salts, etc. Some more specific examples include acids or salts of boric, phosphoric, sulfuric, and so forth and mixtures thereof (note page 21, line 26 to page 22, line 11). Since phosphoric acid is specifically mentioned in WO '993, such disclosure is considered as having sufficient specificity for anticipation rejection.

For component c): the iodide salts useful herein are those having the following general formula: MI_n where M is a metal ion and is selected from alkali metals, alkaline earth metals, transition metals, and mixtures thereof, and n is a number equal to the metal valency (note page 9, lines 4-8). The iodide salts as disclosed in WO '993 is considered the same as the claimed "reducing agent".

For component d): WO '993 discloses that solvents may be used depending on the form the compositions are supplied in and some useful solvents include, but are not limited to, water, glycerin, sorbitol, etc.

In Example 58, upon addition of chlorite salt to a composition as listed in Table 21, a rapid (<10 seconds) generation of chlorine dioxide was observed. In the composition, citric acid, potassium iodide, and deionized water are used as claimed components a), b) and c), respectively (note page 51). The potassium iodide used in WO '993 would inherently be "antimicrobial in nature" as required in the instant claim 32.

The water can be considered both as the solvent and the diluent as required in the instant claims 26-27.

For claim 34, 45-46, WO '993 further discloses that other ingredients may be added to the composition including surfactants, emulsion stabilizers, buffers (the last two can be considered as the claimed "stabilizing agent") (note page 12, lines 20-26). The surfactant can be nonionic, cationic, anionic or amphoteric surfactants (note page 16, lines 3-5).

For claims 38-39, WO '993 teaches that the compositions are not dependent on pH for chlorine dioxide generation, and chlorine dioxide generation will occur at any pH from about 1 to about 11, and preferably about 2 to about 11. The lower values of "about 1" and "about 2" are well within the claimed ranges of "below 5" and "below 3".

For claims 43-44, the molar ratio of chlorite to iodo-compound is 2 or more (note page 11, lines 12-15). The value of "2" is well within the claimed ranges.

The "composition" as disclosed in WO '993 anticipates the claimed product.

Claims 24-33, 36-37, 43-44 are rejected under 35 U.S.C. 102(b) as being anticipated by Madray 6,231,830.

Madray '830 discloses a method for generating molecular chlorine dioxide by reacting in a solution an alkali metal chlorite with an alkali metal iodide, wherein said alkali metal chlorite is from about 0.03% to about 5% by weight of said solution and said alkali metal iodide is present in an amount of from about 1.4% to about 43% by weight of the alkali metal chlorite (note claim 1).

In one preferred embodiment, stopped vials containing 60 cc of deionized water (which is considered the same as the claimed "solvent" and "diluent"), with

$\text{Na}_2\text{PO}_4 \cdot 7\text{H}_2\text{O}$ and different amounts of 25% NaClO_2 (which is the same as the claimed metal chlorite), received 0.00625 g KI (which is the same as the claimed reducing agent), 0.05 g KH_2PO_4 , and 0.025 g 0.1 N H_3PO_4 (which is the same as the claimed activator, i.e. phosphoric acid).

The lower value of “about 0.03%” for the metal chlorite fairly teaches a value that slightly less than 0.03% or 300 ppm as required in the instant claim 36. Madray ‘830 also discloses that the amount of chlorite can be in an amount from about 0.01% to about 5% by weight of the composition (note column 4, lines 33-35), the value of “about 0.01%”, or about 100 ppm, is well within the claimed range.

When the value for the metal chlorite is “about 0.03%”, or 300 ppm, the amount of alkali metal iodide would be from $(1.4\% * 300 \text{ ppm} =) 4.2 \text{ ppm}$ to $(43\% * 300 \text{ ppm} =) 129 \text{ ppm}$. The lower value of 4.2 ppm is well within the claimed range of “less than 50 ppm”.

The molar ratio of the chlorite to the iodide in Madray ‘830 is calculated to be about 8.7 to 65 based on claim 4, the amount of KI is from about 2.8 to 20.9% by weight of the NaClO_2 (with MW of KI and NaClO_2 being 166 and 90.5 g/mol, respectively). The lower value of 8.7 is well within the claimed ranges.

The “composition” as disclosed in Madray '830 anticipates the claimed product.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 24-35, 38-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO '993, optionally further in view of Hamilton et al (2001/0038805).

WO '993 discloses a process for producing chlorine dioxide as stated in the above rejection.

In the event that the number of embodiments disclosed in WO '993 is too large for anticipation, it would have been obvious to one of ordinary skill in the art to select any embodiments among the specifically disclosed embodiments, see *Merck & Co. v. Biocraft Labs.*, 874 F.2d 804, 807, 10 USPQ2d 1843, 1846 (Fed. Cir. 1989).

For other values beside the end points for pH, molar ratio of chlorite to iodide, the ranges disclosed in WO '993 overlap the claimed ranges. With respect to the encompassing and overlapping ranges previously discussed, the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time of invention to select the portion of the prior art's range which is within the range of the applicants' claims because it has been held *prima facie* case of obviousness to select a value in a known range by optimization for the results. *In re Boesch*, 205 USPQ 215. Additionally, the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a *prima facie* case of obviousness. *In re Malagari*, 182 USPQ 549.

For claim 35, WO '993 does not specifically disclose the use of ascorbic acid in the process of producing chlorine dioxide, however, it would have been obvious to one

skilled in the art to select any suitable acid (which can be also a stabilizer) or suitable stabilizer in order to facilitate the formation of chlorine dioxide.

Optionally, Hamilton '805 can be applied to teach an apparatus for delivery of gas, such as chlorine dioxide (note claim 1). The reactants for producing chlorine dioxide are an aqueous soluble acid and an aqueous soluble chlorite (note paragraph [0098]). The acid can be citric acid, phosphoric acid, ascorbic acid, etc. and mixtures thereof (note paragraph [0099]). Hamilton '905 fairly teaches that phosphoric, citric acid and ascorbic acid are analogous acids for the process of producing chlorine dioxide from a chlorite. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use ascorbic acid instead of or in addition to the phosphoric acid as disclosed in WO '993 because using a substituting one acid with an analogous acid or using a combination of two analogous acids for the same purpose is well within the skill of the artisan.

Hamilton '905 can be further applied to teach that the presence of other ingredients such as stabilizers, and buffers to control the pH is desired (note paragraph [0104]). Thus, it would have been obvious to one skilled in the art to select any appropriate compound as the stabilizer for the process of the producing chlorine dioxide from chlorite as disclosed in both WO '993 and Hamilton '905.

Claims 24-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Madray '830 in view of WO '993, and optionally further in view of Hamilton '805.

Madray '830 discloses a process for producing chlorine dioxide as stated in the above rejection.

For other values beside the end points in Madray '830, the ranges disclosed in Madray '830 for the amount of chlorite, iodide, ratio of these two compounds, overlap the claimed ranges, see *In re Malagari* as stated above.

For the reaction time, Madray '830 discloses that the production of 5 mg/l of chlorine dioxide is in less than 30 minutes (note column 6, lines 20-24). The range of "less than 30 minutes" fairly suggests the claimed "less than 5 minutes". Furthermore, the "effective quantity" as required in the instant claims can be much lower than 5 mg/l, thus, it would take less time in Madray '830 to produce the "effective quantity" of chlorine dioxide. In any event, since the amounts of the chlorite and iodide as disclosed in Madray '830 are similar to the amounts required in the instant claims, and the "composition" of Madray '830 has all the required components as listed in the instant claim 1, an "effective quantity" of chlorine dioxide would inherently be produced in less than five minutes in the process of Madray '830.

Madray '830 does not disclose the presence of a surfactant and a low pH for "the solution".

WO '993 is applied as stated above to teach that a surfactant is a desired component to add to the process for producing chlorine dioxide from chlorite (note page 16, lines 3-5). WO '993 is also teaches that a process using similar reactants, i.e. chlorite, iodide, phosphoric acid, can be carried at a wide pH range, i.e. 1 to 11, to produce chlorine dioxide (note page 21, lines 7-11).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a surfactant and to use a wider pH range in the process of Madray '830, as suggested by WO '993 because these features are desirable in an analogous process.

Optionally, Hamilton '805 can be applied as stated in the above rejection.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoc-Yen M. Nguyen whose telephone number is (571) 272-1356. The examiner can normally be reached on Part time schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ngoc-Yen M. Nguyen/
Primary Examiner, Art Unit 1793

nmm
July 24, 2008